

# Gunn Diode Oscillator Minutes

David Headland

2004-03-25 10:00

## Attendance

- Fourth year students:
  - JM Higginbotham.
  - R Wan.
  - DP Headland.
  - MP Gaskill.
  - AJ Nelms (10:42).
  - RE Irwin (11:01).
- UMIST staff:
  - WS Truscott (10:50).

## Apologies

- JM Higginbotham.

## Approvals

- The minutes from last week's meeting were approved.

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## Power supply

- Everything apart from the PCB has been designed.
- PCB design is mainly complete but needs finalising.
  - Pad widths need defining.
  - Trace widths need defining.
- Estimated time plan for the power supply:
  - Submit the circuit design tomorrow.
  - Have components fitted by Easter.
  - Complete testing by the first week after the holidays.

## e2v meeting

- A separate set of minutes was produced by MP Gaskill.
- Lots of help was obtained from Keith Newsome.
- We have requested a copy of the HFSS Gunn diode model.
- P Norton explained the function of the radial line transformer.
- The positioning of diodes within the housing was discussed.
- Diodes will be offset from centre to allow for more combinations.
- The offset will be  $\frac{\lambda_g}{12}$ .
- This was a major decision, and should be documented as such.
- Measurements of the radial line transformer must be made and sent to P Norton ASAP.
- Mechanical engineering have measurement specialists.
- They may be able to measure the pin to high accuracy and precision.

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## Simulation

- Simulated designs have been compared to e2v's designs.
- One notch gives -40 dB rejection.
- A single notch resonates in the transformer cavity at 80–90 GHz.
- The second notch stops the resonating.
- This suggests a match between simulation and practical results.

## Financial position

- The finances have been organised.
- Cumulative costs are as follows:
  - Physical oscillator materials: £200.
  - Including waveguide extensions: £400.
  - Overheads including stationery: £550.
  - Total cost including labour: £6500.

## Proposed actions

All	Finish documentation and submit.
DP Headland	Look into the frequency pushing testing method.
MP Gaskill	Order some 3 mm threaded bar.
DP Headland	Change the typeface in the diagram in the e2v minutes.
RE Irwin	Send the radial line transformer dimensions to P Norton.
RW, AJN, DPH	Discuss connectors for the PCB.

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## Next meeting

Time Thursday 22 April 2004, 10:00.

Place D2c coffee room.

Meeting adjourned, 12:13.